



Fisheries Monitoring Program

Introduction

Shenandoah National Park has had a comprehensive fisheries monitoring program in place since 1982 with emphasis on developing an understanding of eastern brook trout population dynamics. Up until 1994, fisheries monitoring was conducted using qualitative procedures. These qualitative procedures included a

number of shortcomings. In 1996, the program was officially switched to the current combination of quantitative and qualitative procedures. It appears that financial constraints, beginning in 2005, will force the reduction of sampling to every other year in place of the current annual regime.

Management Needs

Park fisheries are an important ecosystem component. Park populations of brook

trout are also important because cold water fishery resources continue to be degraded by the establishment of exotic fishes and by the effects of acidification.

Brook trout (*Salvelinus fontinalis*) are a sought after native fish species for recreational fishermen in Shenandoah National Park.



The monitoring program provides a detailed view of fish population dynamics in response to flood or drought events, problems associated with stream acidification as well as concerns over fishing pressure in a large suite of park streams including all of those that are open for the legal harvest of trout.

Current Procedures

Water temperature, pH, dissolved oxygen, conductivity, discharge, game fish species (length and weight), nongame fish species (count, minimum/maximum length and mass weight) and habitat are all measured at sampling sites. Habitat measurements including stream cross-section widths, water depth, substrate and pool/riffle ratios at 10 meter intervals throughout each stream transect are also gathered. Most transects are approximately 100m in length. There are a total of 74 sampling sites along 43 streams. Thirty-six quantitative (3-pass electrofishing) sites and four qualitative (single pass electrofishing) sites are sampled annually.

Thirty-four additional qualitative sites sampled once every five years. The quantitative component includes sites along 15 streams stratified across the park's three dominant bedrock geologic formations and associated water chemistry ranges.

National Park Service and Virginia Department of Game and Inland Fisheries personnel electroshocking the North Fork Moormans River, Albemarle County, June 2002.

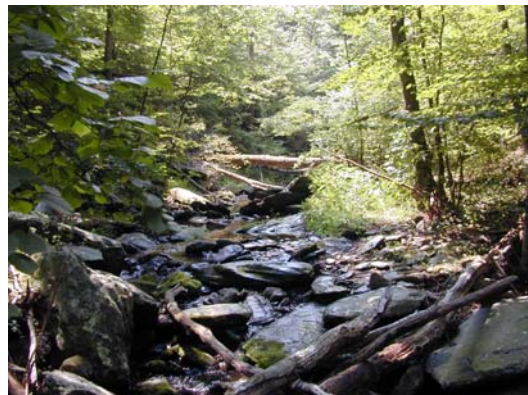


What We Have Learned

Ivy Creek in Green County, sampled July 2004.

We now have nine years of quantitative data from 15 park streams that represent all of the ranges of size, slope, drainage, degrees of acid neutralizing capacity, species diversity and public use. Park staff members clearly have developed in-depth, firsthand knowledge of park fish resources. We know that we can detect changes in fish populations in streams that are sampled annually. It is less clear what the minimum threshold of change detection is, however, so power analysis of the sampling design would be prudent. It is also appropriate at this time to turn our

attention to presentation of trends information.



References

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